

CLAIMS

What is claimed is:

1. An integrated reflector and boom assembly, comprising:
 - a facesheet of stiff reflecting material defining a curved reflecting surface;
 - a series of stiff interlocking ribs defining a reflector section and a boom section, with said boom section being contiguous to said reflector section and covering a smaller area than said reflector section, said series of ribs being interlocked to form a single stiff grid having an axis extending through both said reflector section and said boom section and front and rear faces;
 - said interlocking ribs further comprising:
 - a first plurality of straight ribs oriented in a first direction, said ribs of said first plurality being evenly spaced and in parallel;
 - said first plurality of straight ribs including;
 - a first rib in alignment with said axis of symmetry and extending in one piece through both said reflector section and said boom section and second and third ribs positioned on opposite sides of said first rib, each of said second and third ribs respectively extending in one piece through both said reflector section and said boom section;
 - a second and third plurality of ribs, said second and third plurality of ribs being equal in number;
 - said plurality of ribs in said second plurality being evenly spaced and in parallel and said plurality of ribs in said third plurality being evenly spaced and in parallel;
 - said second plurality of ribs being oriented at a first predetermined angle relative to said first rib of said first plurality of ribs; and
 - said third plurality of ribs being oriented at a second predetermined angle relative to said first rib of said first plurality of ribs, said second predetermined angle being equal to said first predetermined angle and opposite in direction thereto;

an additional straight rib positioned in said boom section, said additional straight rib being oriented at right angles to and interlocked to each of said first, second and third ribs of said first plurality of straight ribs;

said second and third plurality of straight ribs extending through said reflector section with a minority of straight ribs in each of said second and third plurality of straight ribs also extending into said boom section; and

said facesheet being bonded to an edge of said first, second and third plurality of ribs located in said front face of said grid within said reflector section.

2. The integrated reflector and boom assembly as defined in claim 1, wherein said first and second predetermined angles comprise sixty degrees.

3. The integrated reflector and boom assembly as defined in claim 1, wherein first, second and third plurality of ribs define an array of triangles of equal size.

4. The integrated reflector and boom assembly as defined in claim 1, wherein a majority of said triangles comprises isosceles triangles.

5. The integrated reflector and boom assembly as defined in claim 1, wherein said facesheet further defines a flat section and wherein said flat section of said facesheet is bonded to those of said first, second and third plurality of ribs in and underlying said front face of said boom section and to said additional rib.

6. The integrated reflector and boom assembly as defined in claim 5, wherein said plurality of said first plurality of ribs, comprises seventeen and wherein said plurality of each of said first and second plurality of ribs, comprises eighteen.

7. The integrated reflector and boom assembly as defined in claim 1, wherein said material of each of said facesheet and said ribs comprises a graphite composite.
8. The integrated reflector and boom assembly as defined in claim 1, further comprising: a backsheet of stiff sheet material, said backsheet being bonded to another edge of said first, second and third plurality of ribs located in said rear face of said grid within both said reflector and boom sections.
9. The parabolic reflector as recited in claim 8, wherein said backsheet is formed from a graphite composite material.
10. The parabolic reflector as recited in claim 9, wherein said backsheet is a flange backsheet.
11. An integrated reflector and boom assembly, comprising:
 - a surface of stiff reflective sheet material;
 - a stiff grid having a first region for supporting said surface and a second region defining a boom, said second region being contiguous with said first region, said grid having an axis of symmetry;
 - each of said first and second regions including a front face and a rear face, said front face of said first region being larger in area than said front face of said second region and having a profile to mate with said surface;
 - said surface being bonded to at least said front face of said first region;
 - said stiff grid further comprising a plurality of ribs and wherein at least some of said ribs extend in parallel in one piece from said first region into said second region and are positioned symmetrical to said axis of symmetry.

12. The integrated reflector and boom assembly as defined in claim 11, wherein said plurality of ribs further includes:

a straight rib extending in one piece along said axis of symmetry from said first region into said second region.